

## Dispersant Screening Levels for Field Monitoring Activity

The following represent screening levels (based on dissolved seawater concentrations) that may be used to communicate and explain the relevance of measured concentrations of individual dispersant chemical components from Gulf of Mexico waters and that concentrations above these levels are levels of concern. These compounds represent the major constituents of Corexit, those with known toxicology data and those with newly established analytical methods. The screening levels of are based on available biological effects data and are designed to conservatively protect aquatic life. Each of these compounds is subject to wide commercial use in scores of other products beyond Corexit 9500. If a screening level is exceeded, the potential for other source(s) of the chemical will be evaluated.

<u>Compound</u>	<u>Detection Limits</u>	<u>EPA Aquatic Life Screening Level</u>
Propylene Glycol	500 ug/L	500,000 ug/L
2-Butoxyethanol (1)	125 ug/L	165 ug/L
Di(Propylene Glycol) - Butyl ether	1 ug/L	100 mg/L acute (2) 1 mg/L chronic
Dioctylsulfosuccinate	20 ug/L	360 ug/L acute 40 ug/L chronic

(1) A component of Corexit 9527 but not in Corexit 9500

(2) Value based on published literature toxicity data indicating 96 hr LC50 of 1000 mg/l.

The table first represents the Reporting Limit for each compound which is essentially the analytical detection limit for each. The second column represents the EPA Aquatic Life Benchmark which is the concentration determined to protect aquatic life. These were determined following the Great Lakes Water Quality Initiative Tier 2 for criteria development.

### **Biodegradation and Environmental Fate**

Corexit 9500 is classified as readily biodegradable and due to the relative water solubility (polarity) of the components they also will not bioaccumulate. In biodegradation studies conducted by the manufacturer Corexit 9500 showed 78% biodegradation in 28 days. From studies based on biological oxygen demand (BOD), the half life of Corexit 9500 has been estimated to be 4.2 days. As an example, if we take these values and apply them to the entire 1.8M gallons of dispersant applied during the entire surface and sub-surface response program, conservatively assume it was all applied during the final day of July 15<sup>th</sup>, this would result in an estimated total of only 225 gallons of dispersant remaining on September 5<sup>th</sup> in the entire Gulf of Mexico.

Given these rapid degradation rates, it is likely that exposures to aquatic life will be of a relative short term and thus the levels of concern summarized in this document, and based on the US EPA Acute Benchmarks development methods, are appropriately conservative.

Models using US EPA recommended methods also indicate that none of the components of Corexit 9500 are expected to pose an unacceptable risk of bioaccumulation. Their bioconcentration factors (BCF) values are in the range of 2.6-208, all well below the threshold for concern value of 1000. Details are shown by the following:

<u>Compound</u> <u>Factor</u>	<u>28-Day Biodegradation (%Loss)</u>	<u>Bioaccumulation</u>
Propylene glycol	>80	<10
Butoxyethanol	88	<10
Di(Propylene glycol) - Butyl ether	96	2.6
Dioctylsulfosuccinate	61.9	56

### References

Dow, Material Safety Data Sheet(MSDS) – May 6, 2008. DOWANOL – DPNB glycol ether. CAS #29911-28-2.

Sigma-Aldrich. Material Safety Data Sheet. Sept. 8, 2010. Di(propylene glycol) butyl ether. Product number 484237.